

# Claims

[c1] What is claimed is:

1. A method for automatic gain control (AGC) in a receiver of a multiple-antenna system comprising a plurality of modules having a plurality of receiver antennas for substantially simultaneously receiving a plurality of signals via a single frequency band, the method comprising:
  - amplifying the plurality of received signals with at least an amplifier;
  - generating a plurality of time domain samples of the amplified signals with at least an analog-to-digital converter (ADC) connected to the amplifier;
  - determining at least a candidate power according to root-mean-square (RMS) powers of a first group of symbols received at the receiver antennas with a processor connected to the ADC; and
  - setting the gain of the amplifier according to a selected candidate power with the processor.

[c2] 2. The method of claim 1 wherein the received RMS power for one antenna is determined as the square root of the averaged product of each received symbol and its complex conjugate for all symbols of the first group.

- [c3] 3. The method of claim 2 wherein the candidate power is an RMS value of the RMS powers for each antenna determined for a second group of antennas.
- [c4] 4. The method of claim 3 wherein the second group is all receiver antennas.
- [c5] 5. The method of claim 3 wherein the second group is receiver antennas having RMS powers larger than a first threshold.
- [c6] 6. The method of claim 3 wherein the second group is receiver antennas having RMS powers smaller than a second threshold.
- [c7] 7. The method of claim 3 wherein the second group is receiver antennas having RMS powers within a predetermined range spanning a mode of RMS powers of all antennas.
- [c8] 8. The method of claim 2 wherein the candidate power is an arithmetical mean of the RMS powers for each antenna determined for a second group of antennas.
- [c9] 9. The method of claim 8 wherein the second group is all receiver antennas.
- [c10] 10. The method of claim 8 wherein the second group is

receiver antennas having RMS powers larger than a first threshold.

- [c11] 11. The method of claim 8 wherein the second group is receiver antennas having RMS powers smaller than a second threshold.
- [c12] 12. The method of claim 8 wherein the second group is receiver antennas having RMS powers within a predetermined range spanning a mode of RMS powers of all antennas.
- [c13] 13. The method of claim 2 wherein the candidate power is a geometric mean of the RMS powers for each antenna determined for a second group of antennas.
- [c14] 14. The method of claim 13 wherein the second group is all receiver antennas.
- [c15] 15. The method of claim 13 wherein the second group is receiver antennas having RMS powers larger than a first threshold.
- [c16] 16. The method of claim 13 wherein the second group is receiver antennas having RMS powers smaller than a second threshold.
- [c17] 17. The method of claim 13 wherein the second group is receiver antennas having RMS powers within a predetermined range spanning a mode of RMS powers of all antennas.

mined range spanning a mode of RMS powers of all antennas.

- [c18] 18. The method of claim 1 wherein the set gain is a target power divided by the candidate power.
- [c19] 19. The method of claim 1 wherein the symbols are IEEE 802.11a or 802.11g short preamble symbols of the received signals.